

PASSENGER SEAT ARRANGEMENT FOR A VEHICLE

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to European Patent Application No. 14 162 344.7 filed Mar. 28, 2014, which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] The embodiments described herein relate to a passenger seat arrangement that is suitable for use in the passenger cabin of an aircraft and in other means of transport, such as, for example, buses or trains.

BACKGROUND

[0003] In modern means of transport, in particular in aircraft, it is very important from an economic point of view to make optimum use of the available space in a passenger cabin. Passenger cabins are therefore fitted with as many rows of passenger seats as possible, which are positioned with as little space between them as possible. In order to still more efficiently use the space in a passenger cabin of an aircraft, U.S. Pat. No. 4,066,227 proposes to position an elevated deck structure on a main deck floor in the passenger cabin of a wide-body aircraft for providing a mezzanine seating area in a substantially unused upper lobe of the aircraft fuselage. WO 97/07021 A2 describes a split level seating structure, wherein consecutive rows of seats are alternately arranged at a lower and a higher level.

[0004] It would therefore be desirable to provide a passenger seat arrangement that permits optimum use of the space in a passenger cabin of an aircraft or other means of transport, but still provides a high level of comfort for the passengers using the seat arrangement. It would further be desired to provide a passenger cabin region which is equipped with a passenger seat arrangement of this kind.

SUMMARY

[0005] A passenger seat arrangement comprises at least one first seat arranged at a first lower level and at least one second seat arranged at a second elevated level. When the passenger seat arrangement is mounted in a passenger cabin of a vehicle, the first lower level at which the first seat is arranged may be defined by a floor of the passenger cabin. The first lower level, however, also may be elevated or lowered relative to the floor of the passenger cabin. Each of the first and the second seats comprises a supporting surface for supporting a passenger. The supporting surface may comprise a backrest portion, a seating portion and a feet supporting portion, and is movable between an upright seating position and a reclined lying position. In the upright seating position, the backrest portion may extend at an angle of approximately 90° relative to the seating portion. To the contrary, in the reclined lying position, the backrest portion may extend at an angle of approximately 130 to 180° relative to the seating portion. In one embodiment of the passenger seat arrangement that provides for a particularly high passenger comfort, at least one of the first and the second seats, in its reclined lying position, is provided with an entirely flat supporting surface with the backrest portion, the seating portion and the feet supporting portion extending at an angle of substantially 180° relative to each other.

[0006] At least one of the first and the second seats is constructed in such a manner that a movement of its supporting surface from the upright seating position into the reclined lying position results in an increase of a distance between the supporting surface of the first seat and the supporting surface of the second seat. For example, the first seat may be constructed in such a manner that a movement of its supporting surface from the upright seating position into the reclined lying position results in a lowering of the supporting surface relative to the supporting surface of the second seat thus increasing the distance between the supporting surface of the first seat and the supporting surface of the second seat. Alternatively or additionally thereto, the second seat may be constructed in such a manner that a movement of its supporting surface from the upright seating position into the reclined lying position results in a raising of the supporting surface relative to the supporting surface of the first seat thus also increasing the distance between the supporting surface of the first seat and the supporting surface of the second seat.

[0007] In the passenger seat arrangement, the design of the first and/or the second seat thus provides passengers occupying the seats of the passenger seat arrangement enough space to guarantee a high level of comfort independent of whether the seats of the passenger seat arrangement are used in their upright seating position or their reclined lying position. Simultaneously, as compared to usual one level seat arrangements, the passenger seat arrangement allows the installation of a higher number of seats within a given installation space inside a passenger cabin of a vehicle. The passenger seat arrangement thus is in particular suitable for use in, for example, the Business Class area of an aircraft cabin.

[0008] In a preferred embodiment of the passenger seat arrangement, the first and the second seats are positioned offset relative to each other along a longitudinal axis of the passenger seat arrangement. This arrangement permits optimum use of the available space in a vehicle passenger cabin and simultaneously optimum comfort for the passengers occupying the seats of the passenger seat arrangement. For example, the first and the second seats can be arranged in such a manner that the first seat, along the longitudinal axis of the passenger seat arrangement, is positioned behind the second seat such that, when both the first and the second seats have their supporting surfaces in the upright seating position, the passenger occupying the first seat has enough head clearance behind the second seat. The head clearance for the passenger occupying the first seat with its supporting surface in the upright seating position may be maintained by constructing the second seat in such a manner that a movement of its supporting surface from the upright seating position into the reclined lying position results in a raising of the supporting surface relative to the supporting surface of the first seat.

[0009] The passenger seat arrangement may further comprise an ottoman arranged at the first lower level in front of the first seat. The ottoman then may be used for providing an additional feet supporting portion for the passenger occupying the first seat. Further, the ottoman may be equipped with storage compartments for storing items such as newspapers and the like. A stair or ladder for providing access to the second seat may be mounted to a side surface of the ottoman. The stair or ladder then does not require additional installation space, but may be integrated in the existing ottoman. The use of an ottoman as a support for a stair or ladder for providing access to the second seat is particularly suitable in a passenger seat arrangement, wherein the first and the second